#23

OIPE

```
        RAW SEQUENCE LISTING                        DATE: 08/10/2004
        PATENT APPLICATION:  US/09/909,238F         TIME: 11:09:44

        Input Set : N:\LMOORE\pto.lm 09909238f.TXT
        Output Set: N:\CRF4\08102004\I909238F.raw

     3 <110> APPLICANT: ARTEMIS PHARMACEUTICALS GmbH
     5 <120> TITLE OF INVENTION: Recombinant Influenza Viruses with Bicistronic vRNAs Coding
for Two Genes
     6         in Tandem Arrangement
     8 <130> FILE REFERENCE: Kreisler 1092-KGB
·C--> 10 <140> CURRENT APPLICATION NUMBER: US/09/909,238F
 C--> 11 <141> CURRENT FILING DATE: 2001-07-19
    13 <160> NUMBER OF SEQ ID NOS: 24
    15 <170> SOFTWARE: PatentIn Ver. 2.1
    17 <210> SEQ ID NO: 1
    18 <211> LENGTH: 12
    19 <212> TYPE: RNA
    20 <213> ORGANISM: Influenza A virus
    22 <400> SEQUENCE: 1
    23 ccugcuuuug cu                                                   12
    26 <210> SEQ ID NO: 2
    27 <211> LENGTH: 12
    28 <212> TYPE: RNA
    29 <213> ORGANISM: Influenza B virus
    31 <220> FEATURE:
    32 <221> NAME/KEY: misc_feature
    33 <222> LOCATION: (1)...(2)
    34 <223> OTHER INFORMATION: n=any nucleotide
    36 <220> FEATURE:
    37 <221> NAME/KEY: misc_feature
    38 <222> LOCATION: (3)
    39 <223> OTHER INFORMATION: y is t/u or c
W--> 40 <400> SEQUENCE: 2
W--> 41 nnygcuucug cu                                                  12
    44 <210> SEQ ID NO: 3
    45 <211> LENGTH: 12
    46 <212> TYPE: RNA
    47 <213> ORGANISM: Influenza C virus
    49 <400> SEQUENCE: 3
    50 ccugcuucug cu                                                   12
    54 <210> SEQ ID NO: 4
    55 <211> LENGTH: 12
    56 <212> TYPE: RNA
    57 <213> ORGANISM: Artificial Sequence
    59 <220> FEATURE:
    60 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
    61         influenza A 3'-sequence (pHL1104 and pHL1920)
    63 <400> SEQUENCE: 4
    64 ccuguuucua cu                                                   12
```

ENTERED

```
 67 <210> SEQ ID NO: 5
 68 <211> LENGTH: 12
 69 <212> TYPE: RNA
 70 <213> ORGANISM: Artificial Sequence
 72 <220> FEATURE:
 73 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
 74       influenza A 3'-sequence (pHL1948)
 76 <400> SEQUENCE: 5
 77 ccugguucuc cu                                                    12
 80 <210> SEQ ID NO: 6
 81 <211> LENGTH: 13
 82 <212> TYPE: RNA
 83 <213> ORGANISM: Influenza A virus
 85 <400> SEQUENCE: 6
 86 aguagaaaca agg                                                   13
 89 <210> SEQ ID NO: 7
 90 <211> LENGTH: 13
 91 <212> TYPE: RNA
 92 <213> ORGANISM: Influenza B virus
 94 <220> FEATURE:
 95 <221> NAME/KEY: misc_feature
 96 <222> LOCATION: (12)..(13)
 97 <223> OTHER INFORMATION: n=any nucleotide
 99 <220> FEATURE:
100 <221> NAME/KEY: misc_feature
101 <222> LOCATION: (6)
102 <223> OTHER INFORMATION: w is a or t/u
104 <220> FEATURE:
105 <221> NAME/KEY: misc_feature
106 <222> LOCATION: (11)
107 <223> OTHER INFORMATION: r is g or a
111 <400> SEQUENCE: 7
```

W--> **112 aguagwaaca rnn   13**

```
115 <210> SEQ ID NO: 8
118 <211> LENGTH: 13
119 <212> TYPE: RNA
120 <213> ORGANISM: Influenza C virus
122 <400> SEQUENCE: 8
123 agcaguagca agr                                                  13
126 <210> SEQ ID NO: 9
127 <211> LENGTH: 13
128 <212> TYPE: RNA
129 <213> ORGANISM: Artificial Sequence
131 <220> FEATURE:
132 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
133       influenza A 5'-sequence (pHL1920)
135 <400> SEQUENCE: 9
136 agaagaauca agg                                                  13
139 <210> SEQ ID NO: 10
```

RAW SEQUENCE LISTING   DATE: 08/10/2004
PATENT APPLICATION: US/09/909,238F   TIME: 11:09:44

Input Set : **N:\LMOORE\pto.lm 09909238f.TXT**
Output Set: **N:\CRF4\08102004\I909238F.raw**

```
     140 <211> LENGTH: 21
     141 <212> TYPE: RNA
     142 <213> ORGANISM: Influenza A virus
     144 <220> FEATURE:
     145 <221> NAME/KEY: misc_feature
     146 <222> LOCATION: (14)..(16)
     147 <223> OTHER INFORMATION: n=any nucleotide
     150 <400> SEQUENCE: 10
W--> 151 aguagaaaca aggnnnuuuu u                                21
     154 <210> SEQ ID NO: 11
     155 <211> LENGTH: 21
     156 <212> TYPE: RNA
     157 <213> ORGANISM: Artificial Sequence
     159 <220> FEATURE:
     160 <221> NAME/KEY: misc_feature
     161 <222> LOCATION: (14)..(16)
     162 <223> OTHER INFORMATION: n=any nucleotide
     165 <220> FEATURE:
     166 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
     167       influenza A 5'-sequence (pHL1920)
     169 <400> SEQUENCE: 11
W--> 170 agaagaauca aggnnnuuuu u                                21
     173 <210> SEQ ID NO: 12
     174 <211> LENGTH: 21
     175 <212> TYPE: RNA
     176 <213> ORGANISM: Influenza B virus
     178 <220> FEATURE:
     179 <221> NAME/KEY: misc_feature
     180 <222> LOCATION: (12)..(16)
     181 <223> OTHER INFORMATION: n=any nucleotide
     183 <220> FEATURE:
     184 <221> NAME/KEY: misc_feature
     185 <222> LOCATION: (6)
     186 <223> OTHER INFORMATION: w is a or t/u
     188 <220> FEATURE:
     189 <221> NAME/KEY: misc_feature
     190 <222> LOCATION: (11)
     191 <223> OTHER INFORMATION: r is g or a
     193 <400> SEQUENCE: 12
W--> 194 aguagwaaca rnnnnnuuuu u                                21
     197 <210> SEQ ID NO: 13
     198 <211> LENGTH: 19
     199 <212> TYPE: RNA
     200 <213> ORGANISM: Artificial Sequence
     202 <220> FEATURE:
     203 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
     204       influenza C 5'-sequence
     206 <400> SEQUENCE: 13
     207 aguaguaaca agrguuuuu                                   19
```

RAW SEQUENCE LISTING   DATE: 08/10/2004
PATENT APPLICATION: US/09/909,238F   TIME: 11:09:44

Input Set : N:\LMOORE\pto.lm 09909238f.TXT
Output Set: N:\CRF4\08102004\I909238F.raw

```
209 <210> SEQ ID NO: 14
210 <211> LENGTH: 15
211 <212> TYPE: RNA
212 <213> ORGANISM: Artificial Sequence
214 <220> FEATURE:
215 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
216       influenza A 3'-sequence (pHL1104 and pHL1920)
218 <220> FEATURE:
219 <221> NAME/KEY: misc_feature
220 <222> LOCATION: (1)...(3)
221 <223> OTHER INFORMATION: n=any nucleotide
224 <400> SEQUENCE: 14
```
W--> 225 nnnccuguuu cuacu   15
```
227 <210> SEQ ID NO: 15
228 <211> LENGTH: 15
229 <212> TYPE: RNA
230 <213> ORGANISM: Artificial Sequence
232 <220> FEATURE:
233 <221> NAME/KEY: misc_feature
234 <222> LOCATION: (1)...(3)
235 <223> OTHER INFORMATION: n=any nucleotide
237 <220> FEATURE:
238 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
239       influenza A 3'-sequence (pHL1948)
241 <400> SEQUENCE: 15
```
W--> 242 nnnccugguu cuccu   15
```
244 <210> SEQ ID NO: 16
245 <211> LENGTH: 15
246 <212> TYPE: RNA
247 <213> ORGANISM: Artificial Sequence
249 <220> FEATURE:
250 <221> NAME/KEY: misc_feature
251 <222> LOCATION: (1)...(5)
252 <223> OTHER INFORMATION: n=any nucleotide
254 <220> FEATURE:
255 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
256       influenza B 3' sequence
258 <400> SEQUENCE: 16
```
W--> 259 nnnnnyguuu cuacu   15
```
261 <210> SEQ ID NO: 17
262 <211> LENGTH: 14
263 <212> TYPE: RNA
264 <213> ORGANISM: Artificial Sequence
266 <220> FEATURE:
267 <223> OTHER INFORMATION: Description of Artificial Sequence: Modified
268       influenza C 3'-sequence
270 <400> SEQUENCE: 17
271 ccccuguuuc uacu                                                14
273 <210> SEQ ID NO: 18
```

RAW SEQUENCE LISTING   DATE: 08/10/2004
PATENT APPLICATION: **US/09/909,238F**   TIME: 11:09:44

Input Set : **N:\LMOORE\pto.lm 09909238f.TXT**
Output Set: **N:\CRF4\08102004\I909238F.raw**

```
274 <211> LENGTH: 10
275 <212> TYPE: DNA
276 <213> ORGANISM: Influenza A virus
278 <400> SEQUENCE: 18
279 aggtacgttc                                                           10
282 <210> SEQ ID NO: 19
283 <211> LENGTH: 32
284 <212> TYPE: DNA
285 <213> ORGANISM: Influenza A virus
287 <400> SEQUENCE: 19
288 gctgaaaaat gatcttcttg aaaattgcag gc                                  32
291 <210> SEQ ID NO: 20
292 <211> LENGTH: 3888
293 <212> TYPE: DNA
294 <213> ORGANISM: Artificial Sequence
296 <220> FEATURE:
297 <223> OTHER INFORMATION: Description of Artificial Sequence: pHL1920
299 <400> SEQUENCE: 20
300 cccaaaaaaa aaaaaaaaaa aaaaaaaaag agtccagagt ggccccgccg ttccgcgccg 60
301 gggggggggg ggggggggga cactttcgga catctggtcg acctccagca tcgggggaaa 120
302 aaaaaaaaac aaagtttcgc ccggagtact ggtcgacctc cgaagttggg ggggagtaga 180
303 aacagggtag ataatcactc actgagtgac atccacatcg cgagcgcgcg taatacgact 240
304 cactataggg cgaattgggt accgggcccc ccctcgaggt cgacggtatc gataagcttc 300
305 gacgagattt tcaggagcta aggaagctaa aatggagaaa aaaatcactg gatataccac 360
306 cgttgatata tcccaatggc atcgtaaaga acattttgag gcatttcagt cagttgctca 420
307 atgtacctat aaccagaccg ttcagctgga tattacggcc ttttttaaaga ccgtaaagaa 480
308 aaataagcac aagtttttatc cggcctttat tcacattctt gcccgcctga tgaatgctca 540
309 tccggaattc cgtatggcaa tgaaagacgg tgagctggtg atatgggata gtgttcaccc 600
310 ttgttacacc gttttccatg agcaaactga aacgttttca tcgctctgga gtgaatacca 660
311 cgacgatttc cggcagtttc tacacatata ttcgcaagat gtggcgtgtt acggtgaaaa 720
312 cctggcctat ttccctaaag ggtttattga gaatatgttt ttcgtctcag ccaatccctg 780
313 ggtgagtttc accagttttg atttaaacgt ggccaatatg gacaacttct tcgcccccgt 840
314 tttcaccatg ggcaaatatt atacgcaagg cgacaaggtg ctgatgccgc tggcgattca 900
315 ggttcatcat gccgtttgtg atggcttcca tgtcggcaga atgcttaatg aattacaaca 960
316 gtactgcgat gagtggcagg gcggggcgta attttttaa ggcagttatt ggtgccctta 1020
317 aacgcctggt gctacgcctg aataagtgat aataagcgga tgaatggcag aaattcgtcg 1080
318 aagcttgata tcgaattcct gcagcccggg ggatccacta gttctagagc ggccgccacc 1140
319 gcggtggagc tccagctttt gttcccttta gtgagggtta attgcgcgca ggcctagcta 1200
320 ggtaaagaaa aatacccttg attcttctaa taacccggcg gcccaaaatg ccgactcgga 1260
321 gcgaaagata tacctccccc ggggccggga ggtcgcgtca ccgaccacgc cgccggccca 1320
322 ggcgacgcgc gacacggaca cctgtcccca aaaacgccac catcgcagcc acacacggag 1380
323 cgcccggggc cctctggtca accccaggac acacgcggga gcagcgccgg gccggggacg 1440
324 ccctcccggc cgcccgtgcc acacgcaggg ggccggcccg tgtctccaga gcgggagccg 1500
325 gaagcatttt cggccggccc ctcctacgac cgggacacac gagggaccga aggccggcca 1560
326 ggcgcgacct ctcgggccgc acgcgcgctc agggagcgct ctccgactcc gcacggggac 1620
327 tcgccagaaa ggatcgtgac ctgcattaat gaatcagggg ataacgcagg aaagaacatg 1680
328 tgagcaaaag gccagcaaaa ggccaggaac cgtaaaaagg ccgcgttgct ggcgttttc 1740
329 cataggctcc gcccccctga cgagcatcac aaaaatcgac gctcaagtca gaggtggcga 1800
330 aacccgacag gactataaag ataccaggcg tttccccctg gaagctccct cgtgcgctct 1860
```

RAW SEQUENCE LISTING ERROR SUMMARY DATE: 08/10/2004
PATENT APPLICATION: **US/09/909,238F** TIME: 11:09:45

Input Set : **N:\LMOORE\pto.lm 09909238f.TXT**
Output Set: **N:\CRF4\08102004\I909238F.raw**

Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the
Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:2; N Pos. 1,2
Seq#:7; N Pos. 12,13
Seq#:10; N Pos. 14,15,16
Seq#:11; N Pos. 14,15,16
Seq#:12; N Pos. 12,13,14,15,16
Seq#:14; N Pos. 1,2,3
Seq#:15; N Pos. 1,2,3
Seq#:16; N Pos. 1,2,3,4,5

Invalid Line Length:
The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:1; Line(s) 5

VERIFICATION SUMMARY   DATE: 08/10/2004
PATENT APPLICATION: **US/09/909,238F**   TIME: 11:09:45

Input Set : **N:\LMOORE\pto.lm 09909238f.TXT**
Output Set: **N:\CRF4\08102004\I909238F.raw**

```
L:10  M:270 C: Current Application Number differs, Replaced Application Number
L:11  M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:40  M:283 W: Missing Blank Line separator, <400> field identifier
L:41  M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 after pos.:0
L:112 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:7 after pos.:0
L:151 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:10 after pos.:0
L:170 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:11 after pos.:0
L:194 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:12 after pos.:0
L:225 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:14 after pos.:0
L:242 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:15 after pos.:0
L:259 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:16 after pos.:0
```